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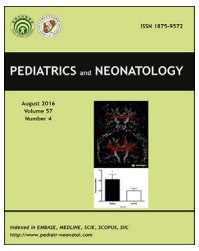

EDITORIAL

Albuminuria in Childhood is a Risk Factor for Chronic Kidney Disease and End-Stage Renal Disease

Emerging studies have shown that albuminuria, which is traditionally viewed as a marker of renal damage, has a direct lethal effect on the kidney tissue; this leads to a progressive loss of renal function.[1] Multiple mechanisms have been proposed to explain the effect of increased albuminuria on renal damage. Nonetheless, all these pathways result in tubulointerstitial damage.

A large meta-analysis that included more than 2 million participants from 46 cohorts in Asia, Australasia, Europe, and North and South America spanning more than 40 years and with a mean follow-up time of 5.8 years concluded that both low estimated glomerular filtration rate (eGFR) and high albuminuria were independently associated with mortality and end-stage renal disease (ESRD), regardless of age.[2] After further analyses using these data of cohort studies, Nitsch et al[3] found that the risks for mortality were higher in men than in women at all levels of eGFR and albuminuria. However, the slope of the associations with lower eGFR and higher albuminuria was steeper for women than for men. Therefore, albuminuria has been considered an appropriate therapeutic target in patients with chronic kidney disease (CKD),[1] although more detailed studies are still warranted.[4]

These cohorts did not include pediatric cases (<18 years). To explore the unknown association between albuminuria in childhood and CKD with mortality and ESRD in later life, Lin and Huang[5] analyzed the mass urinary screening data performed among Taiwanese elementary and junior students[6] since 1990. Samples were collected during the period 1992–1996 and were followed up until 2009. Lin and Huang[5] noted that the childhood albuminuria category was associated with the risk of mortality. In addition, heavy albuminuria further reduced the survival rate of CKD children. Moreover, the prevalence rates of CKD and ESRD were higher in albuminuria cases. With the adjustment of eGFR decline, the hazard ratio of albuminuria in childhood to ESRD was sixfold higher (hazard ratio = 3.24; 95% confidence interval, 2.12–3.84). They further identified that systolic blood pressure, higher serum cholesterol levels, and lower serum albumin levels were strongly correlated with lower eGFR among CKD patients (age range, 7–17 years) with albuminuria.

The conclusions drawn from this pediatric study bridge the gap in exploring the association of albuminuria with CKD and ESRD in individuals of different age groups. Nevertheless, there are significant differences in the etiological association between albuminuria in childhood and adults. This study[5] has shown that the etiology of albuminuria in childhood can be attributed to primary glomerulonephritis (35.2%; primarily in focal segmental glomerulosclerosis, IgA mesangial nephropathy, and IgM mesangial nephropathy), nephritis secondary to systemic disease (34.2%; primarily in systemic lupus erythematosus with lupus nephritis and purpura nephritis), and hereditary disease (10.4%), whereas the etiology of 10.1% of cases is unknown. In contrast, albuminuria in adults is commonly associated with diabetes, hypertension, smoking, and high body mass index (obesity).[3] Fraser et al[7] even argued that this association in adult albuminuria may be related to the patient's socioeconomic status. Such etiological discrepancies between a case of albuminuria in adults and childhood indicate that different clinical management schemes should be used for pediatric albuminuria patients. In addition, further longitudinal follow up for these cases of albuminuria in childhood until adulthood to examine their renal function changes is warranted and highly expected. This could provide additional evidence on the pathological roles of albuminuria in childhood on renal function impairments, such as CKD and ESRD, in adulthood.

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Conflicts of interest

The author declares no conflicts of interest.

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